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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04M 3/42, H04Q 11/04	A1	(11) International Publication Number: WO 98/48556 (43) International Publication Date: 29 October 1998 (29.10.98)
(21) International Application Number: PCT/FI98/00358 (22) International Filing Date: 22 April 1998 (22.04.98) (30) Priority Data: 971716 22 April 1997 (22.04.97) FI (71) Applicant (for all designated States except US): NOKIA TELECOMMUNICATIONS OY [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI). (72) Inventors; and (75) Inventors/Applicants (for US only): TUOKKOLA, Hannu [FI/FI]; Sepontie 3 B 11, FIN-02130 Espoo (FI). KOPO- NEN, Teuvo [FI/FI]; Naavakuusentie 4 B 1, FIN-90230 Oulu (FI). (74) Agent: PAPULA REIN LAHTELA OY; Fredrikinkatu 61 A, P.O. Box 981, FIN-00101 Helsinki (FI).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: PROCEDURE FOR THE TRANSMISSION OF INFORMATION IN A TELEPHONE NETWORK		
(57) Abstract The present invention relates to a procedure for transmitting information to a predetermined subscriber line or predetermined subscriber lines in a telephone network. In the procedure of the invention for transmitting information to a predetermined subscriber line in a telephone network, which comprises a telephone exchange (1), a number of subscriber lines (2) connected to it and a terminal device (3) connected to the subscriber line, the subscriber number of the subscriber line acting as source of information is stored in the telephone network; the subscriber numbers of the predetermined subscriber lines to which the information is to be transmitted are stored in the telephone network; the information to be transmitted is stored in the telephone network and/or in a peripheral connected to it; and, using a link without actual connection, the predetermined information is transmitted to the predetermined subscriber lines.		

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PROCEDURE FOR THE TRANSMISSION OF INFORMATION IN A TELEPHONE NETWORK

The present invention relates to a procedure for transmitting information to a predetermined subscriber line or predetermined subscriber lines in a telephone network.

Transmission on information over a telephone network is widely known. In prior art, information can be transmitted between two predetermined subscriber lines using computers and modems connected to them. However, such a procedure requires the setup of a connection between the subscriber lines in question. On the other hand, it is also possible to transmit information between subscriber lines by setting up a speech connection between the subscriber lines and using this connection for the transmission of information.

In prior art, no system is known that allows transmission of information to a terminal device that only acts as a passive receiving party, without signalling sent by both parties. At present, however, there is a need for transmission of information independently of the receiver's actions. This means transmitting information by a method in which the information provider activates the transmission without the receiver's acknowledgement. The information or data to be transmitted may consist of commercial advertising information, various performance data service type information or the teleoperator's own advertisements or announcements. Via this arrangement, advertising, marketing and similar information can be directed at given target groups, based e.g. on subscriber location, which can be determined from the subscriber numbers, or on some other corresponding basis. However, the problem is that no such arrangement is known.

The object of the present invention is to disclose a new type of procedure that makes it possi-

ble to fulfill the above-mentioned need for data transmission in a telephone network independently of the receiver's actions. A further object of the invention is to create an arrangement that allows a teleoperator to provide the connections between an information provider and the target subscriber lines.

As for the features characteristic of the invention, reference is made to the claims.

In the procedure of the present invention for transmitting information to a predetermined subscriber line in a telephone network, which comprises a telephone exchange, a number of subscriber lines connected to the telephone exchange and a terminal device connected to the subscriber line, according to the invention, the subscriber number of the subscriber line acting as a source of information is stored in the telephone network, the subscriber numbers of the subscriber lines to which the information is to be transmitted are stored in the telephone network and, further, according to the invention, the information to be transmitted is stored in the telephone network and/or in a peripheral connected to it and, using a link without actual connection, the predetermined information is transmitted to the predetermined subscriber lines. Thus, when the transmission of information is activated, the information to be transmitted and the predetermined subscriber numbers to which the information is to be transmitted are read from the subscriber line acting as source of information, which subscriber line may have e.g. a computer connected to it, and the information is transmitted in suitable information elements of the signalling used in the telephone network.

As compared with prior art, the present invention has the advantage that the procedure of the invention allows transmission of information to certain subscriber lines without requiring any actions to

be carried out at the receiving end. Further, the invention allows information providers to offer their services to their customers without setting up connections between the terminals, which increase the load
5 on the telephone network, while still using telephone network signalling.

The signalling used in the telephone network is preferably ISDN signalling (ISDN, Integrated Services Digital Network), such as ISUP signalling (ISUP,
10 ISDN User Part). In this case, the information to be transmitted can be transferred to the desired subscriber line in the DISPLAY element of the FACILITY message used in ISDN signalling. The transmission can be performed when the subscriber line is in inactive
15 state, in call setup state or in active state. Thus, the transmission can be carried out completely independently of the subscriber line, i.e. the subscriber line is not required to acknowledge the information transmitted or to react to it in any other way.

In an embodiment of the invention, a computer is connected to a predetermined subscriber line in the telephone network and the subscriber numbers to which the information is to be transmitted as well as the information itself are stored in the computer, and the
20 computer is used to control the transmission of the information to the subscriber lines in question. This implementation has the advantage that the service provider can easily change both the content of the information to be transmitted and the subscriber lines
25 forming the target group.

The subscriber number of the subscriber line acting as data source, as well other information needed, such as the predetermined subscriber numbers to which the data is to be transmitted, can be trans-
35 ferred over the telephone network in the information elements of the SETUP message used in ISDN signalling. On the other hand, the information in question can be

stored and transmitted by using the telephone exchange's own control commands, preferably MML commands (MML, Man Machine Language).

5 In a preferred embodiment of the invention, the transmission of information is activated at predetermined intervals of time. The time interval can be defined e.g. in a computer connected to the telephone network or to some other network component controlling data transmission. The information is preferably presented in graphic and/or text format on the display of
10 the terminal device or in the form of sound via a loudspeaker connected to the terminal device.

In the following, a preferred embodiment of the invention will be described by referring to the
15 attached drawing, which presents an arrangement according to the invention, implemented in an ISDN telephone network.

The system presented in the drawing comprises a multi-service ISDN network 5, two telephone exchanges 1 connected to it and workstations 4 connected to the telephone exchanges. Let it be further stated that the ISDN network as such may comprise other telephone exchanges not presented in this context. The signalling between the telephone exchange 1 and the
20 workstation 4 is implemented using DSS1 signalling (DSS1, Digital Signalling System #1), which is a well-known signalling system. The system presented in Fig. 1 further comprises terminal devices 3, which in this example are ISDN terminals. The terminal device 3 may
25 be either an ordinary telephone or it may be an ISDN service switch or some other device capable of ISDN signalling. In the present example, the terminal devices are telephones and they are connected to subscriber lines 2 in the telephone exchange 1 using the
30 basic ISDN line (2B+D).
35

Next, an example will be presented to describe how the procedure of the invention is imple-

mented in the system represented by the figure. The information or service provider can activate the service by calling a specific service number, which has been defined in the telephone exchange. The information can be supplied either directly from a subscriber line connected to the exchange or by using ISDN signalling (ISUP). When calling the service number, the information or service provider gives the following parameters in different information elements of the SETUP message: service number (virtual number of the subscriber line to which the call is routed), the information to be transmitted (information to be distributed among users) and the subscriber number(s) to which the information is to be transmitted. In an embodiment, the information is transmitted in DSS1 signalling as follows:

Information elements of a DSS1 SETUP message:

Called Party Number Information Element: IDS service number (max. 20 characters)

User to User Information Element: the information to be transmitted, IA 5 characters (max 128 bytes)

Called Party Subaddress Information Element: the first ISDN number to which information is to be transmitted (max 20 characters)

Calling Party Subaddress Information Element: the last ISDN number to which information is to be transmitted (max 20 characters).

It is to be noted that the above-described definition and distribution of information can also be implemented as an internal function within the exchange using e.g. a MML user interface, in which case no information distribution equipment like that described above will be needed.

Further, the distribution of the information is carried out from the exchange in which the service number has been implemented. Using a link without ac-

tual connection, transmission of information is set up from the exchange to the ISDN numbers obtained in conjunction with activation. This is done without setting up a call between the subscriber lines. The transmission can be effected while the subscriber line is in inactive state, in call setup state or in active state. In DSS1 signalling, the information can be transmitted e.g. as follows:

Called Party Number Information Element: ISDN number to which the information is to be transmitted (max. 80 characters),

Display Information Element: information to be transmitted, IA 5 characters (max. 80 bytes).

The invention is not restricted to the examples of its embodiments described above, but many variations are possible within the scope of the inventive idea defined by the claims.

CLAIMS.

1. Procedure for transmitting information to a predetermined subscriber line in a telephone network which comprises a telephone exchange (1), a number of subscriber lines (2) connected to it and a terminal device (3) connected to the subscriber line, characterised in that

the subscriber number of the subscriber line acting as source of information is stored in the telephone network;

the subscriber numbers of predetermined subscriber lines to which the information is to be transmitted are stored in the telephone network;

the information to be transmitted is stored in the telephone network and/or in a peripheral connected to it; and

using a link without actual connection, the predetermined information is transmitted to the predetermined subscriber lines.

2. Procedure as defined in claim 1, characterised in that ISDN signalling, such as ISUP signalling, is used in the telephone network.

3. Procedure as defined in claim 1 or 2, characterised in that the information is transmitted to the predetermined subscriber line when the latter is in inactive state, in call setup state or in active state.

4. Procedure as defined in any one of the preceding claims 1 - 3, characterised in that the information is transmitted to the subscriber line in the DISPLAY information element of the FACILITY message used in ISDN signalling.

5. Procedure as defined in any one of the preceding claims 1 - 4, characterised in that

a computer (4) is connected to the subscriber line;

the predetermined subscriber numbers and the information to be transmitted are stored in the computer; and

the computer is used for the control of subscriber numbers and the information to be distributed.

6. Procedure as defined in any one of the preceding claims 1 - 5, characterised in that the subscriber number of the subscriber line acting as source of information and the predetermined subscriber numbers are given in the information elements of the SETUP message in the ISDN signalling.

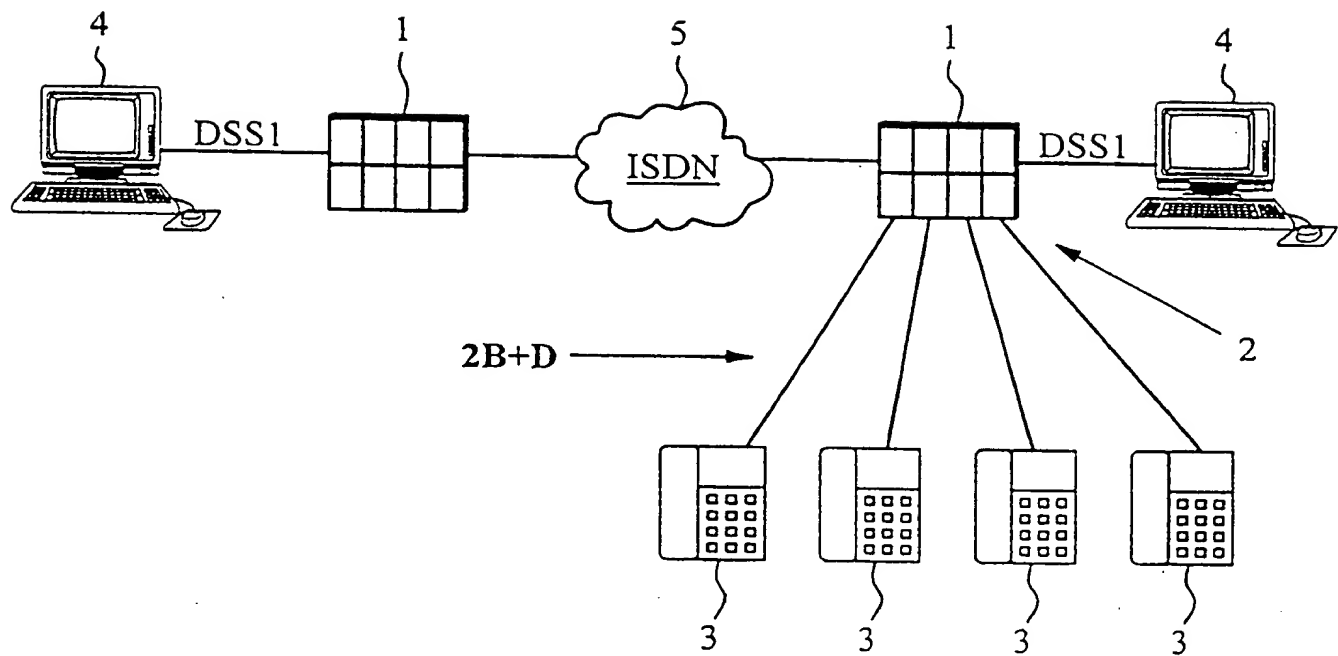
7. Procedure as defined in any one of the preceding claims 1 - 6, characterised in that the predetermined subscriber numbers and the information to be transmitted are stored in the telephone exchange by using its control commands.

8. Procedure as defined in claim 7, characterised in that said numbers and information are stored using the MML interface of the telephone exchange.

9. Procedure as defined in any one of the preceding claims 1 - 8, characterised in that the transmission of information is activated at predetermined time intervals.

10. Procedure as defined in any one of the preceding claims 1 - 9, characterised in that the information to be transmitted is presented in graphic and/or text format on the display of the terminal device (3) or in the form of sound via a loudspeaker of the terminal device.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 98/00358

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04M 3/42, H04Q 11/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04M, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EDOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ISDN 2-9507190-0-7, Volume, 1992, (Palaiseau), Mouly Michel, Pautet Marie-Bernadette, "The GSM System for Mobile Communications" page 56 - page 59; page 556 - page 563	1,3,5,7-10
Y	--	2,4,6
Y	WO 9214329 A1 (TELENOKIA OY), 20 August 1992 (20.08.92), page 1, line 20 - page 2, line 12, abstract	2,4,6
A	WO 9405124 A1 (NOKIA TELECOMMUNICATIONS OY), 3 March 1994 (03.03.94)	1-10
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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

1 October 1998

Date of mailing of the international search report

05 -10- 1998

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International application No.
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